

BUDNIKOV, Petr Petrovich; redaktor; BEREZHNOY, Anatoliy Semenovich;
BULAVIN, Ivan Anisimovich; GRISSIK, Boris Mikhaylovich;
KUKOLEV, Grigoriy Vladimirovich; POLYBOYARINOV, Dmitriy
Nikolayevich; AVGUSTINIK, A.I., doktor tekhnicheskikh nauk,
professor, retsentsent; GUMZAROVA, I.L., redaktor; PANOVA, L.Ya.,
tekhnicheskiiy redaktor.

[Technology of ceramics and refractory materials] Tekhnologiya
keramiki i ognenporov. Pod obshchei red. P.P. Budnikova. Izd.
2-e, perer. Moskva, Gos.izd-vo lit-ry po stroit. materialam,
1955. 698 p. (MLRA 8:12)

1. Deystvitel'nyy chlen AN USSR. 2. Chlen korrespondent AN SSSR.
(Ceramic industries) (Refractory materials)

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 4,
p 95 (USSR) 15-57-4-4654

AUTHORS: Avgustinik, A. I., Babin, P. N.

TITLE: Water-Resistant Dolomite Bricks From Kazakhstan
Dolomites (Vodoustoychivyy dolomitovyy kirpich na baze
dolomitov Kazakhstana)

PERIODICAL: Izv. AN KazSSR, ser. gorn. dela, metallurgii i
stroymaterialov, 1955, Nr 5, pp 105-113.

ABSTRACT: The authors have studied the effect of the degree of
grinding of initial raw material on the quality of
water-resisting dolomite bricks. They examined the
Alekseyevka dolomite, the Tekturmas serpentinite, and
the Karatau phosphorite. The tendency to clinker is
markedly increased by using more highly dispersed
powders. It is not recommended that a combination of
powders with sharply different grain sizes be used, as
this fails to secure a dense fused clinker. Fine grinding

Card 1/2

AID P - 3742

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 6/22

Authors : Avgustinik, A. I. and Ye. I. Vasil'yev

Title : Thermal expansion of some lithium aluminosilicates

Periodical : Zhur. prikl. khim., 28, 9, 939-943, 1955

Abstract : Lithium aluminosilicates: $\text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$; $\text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2$; $\text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$; $\text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 8\text{SiO}_2$ have a negative expansion, the greatest being $-6.5 \cdot 10^{-6}$. The nature of the thermal expansion depends on the ratio of the crystalline phase (with negative expansion) to the glasslike phase (with positive expansion). One table, 4 diagrams, 3 references, 1 Russian (1952).

Institution : None

Submitted : Ja 5, 1954

TOROPOV, N.A., professor; AVGUSTINIK, A.I., professor; BARZAKOVSKIY, V.P.,
doktor khimicheskikh nauk

Scientific research conducted in Czechoslovakia on the technology
of silicates. Stek. i ker. 12 no.10:12-13 O '55. (MIRA 9:1)
(Silicates) (Czechoslovakia--Research)

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7,
p 107 (USSR) 15-57-7-9467

AUTHOR: Avgustinik, A. I.

TITLE: States and Properties of Ceramic Materials (Fazy i
svoystva keramicheskogo materiala)

PERIODICAL: V sb: Fiz.-khim. osnovy keramiki. Moscow, Promstoyindat,
1956, pp 139-159

ABSTRACT: Bibliographic entry
Card 1/1

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31544

paste that had been passed through a micron-
izer and having a specific surface of
 $9.92 \text{ m}^2/\text{g}$. Into the composition of the por-
celain paste was incorporated, in lieu of
quartz, a glass of specific composition (in %):
quartz 48, feldspar 50 and alumina 2, added in
amounts of 100, 60 and 20%, and having a speci-
fic surface of $6.2 \text{ m}^2/\text{g}$. All the samples were
fired in the plant kiln at 1260 and 1320°. The
experiments showed that a finer comminution of
porcelain paste makes it possible to obtain a
porcelain of somewhat enhanced mechanical

Card 2/3

USSR /Chemical Technology. Chemical Products
and Their Application

I-12

Silicates. Glass. Ceramics. Binders.

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 31544

strength and the usual dielectric strength on
lowering the temperature of firing by 60°.

Card 3/3

"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000102610017-3

1 AUGUST 1964 A. I.

1 AUGUST 1964 A. I.

APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000102610017-3"

USSR/Thermodynamics - Thermochemistry. Equilibria.
Physical-Chemical Analysis. Phase Transitions.

B-8

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18511

Author : A.I. Avgustinnik, Ye.I. Vasil'yev.

Title : Study of Thermal Expansion of Solid Solutions of
Ferromagnetic Materials of $\text{NiO-ZnO-Fe}_2\text{O}_3$ and $\text{CuO-ZnO-Fe}_2\text{O}_3$
Systems.

Orig Pub : Zh. prikl. khimii, 1956, 29, No 6, 941-944

Abstract : The thermal expansion of some alloys of the ternary
systems $\text{NiO-ZnO-Fe}_2\text{O}_3$ and $\text{CuO-ZnO-Fe}_2\text{O}_3$ was studied. It
was found that the thermal expansion factor of ternary
solid solutions α decreases together with the decrease of
 Fe_2O_3 concentration until the figurative point passes the
line ZnFe_2O_4 - NiFe_2O_4 in the first system, or ZnFe_2O_4 -
 CuFe_2O_4 in the second system. In such a case, α has a mi-
nimum. The compounds situated on these lines are solid
replacement solutions. α increases at the further

Card 1/2

- 193 -

"APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000102610017-3

APPROVED FOR RELEASE: 06/06/2000

CIA-RDP86-00513R000102610017-3"

AVGUSTINIK, A.I.

USSR/Chemical Technology. Chemical Products and Their
Application - Silicates. Glass. Ceramics. Binders. I-9

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12509

Author : Avgustinik A.I., Kozlovskiy L.V.
Title : Concerning the Strength of Ionic in Pyrophyllite. After
Calcining

Orig Pub : Zh. prikl. khimii., 1956, 29, No 7, 1035-1040

Abstract : Investigated was the strength of bonds between Al ions
and Si ions in pyrophyllite of Moz'r'ovruch deposit,
calcined at different temperatures, by the method of
chemical treatment (solutions of alkalies and acids).
It was found that on action of a 6% solution of HCl on
samples of pyrophyllite calcined at different tempera-
tures, the solubility of the sample calcined at 800°
was highest amounting to 3.60 - 3.83% on the basis of
the calcined material (slight solubility of Al_2O_3 is
due to the "closed" structure of pyrophyllite block).

Card 1/2

- 61 -

PHASE I BOOK EXPLOITATION

384

Avgustinik, Arkadiy Ivanovich

Keramika (Ceramics) Moscow, Promstroyizdat, 1957. 483 p. 10,000 copies printed,

Ed.: Glezarova, I. L.; Tech. Ed.: Gilenson, P. G.

PURPOSE: The monograph is intended as a handbook on production of ceramics for use in factories and institutes.

COVERAGE: The book deals exclusively with the production of ceramics from clays only. Stress is laid on advanced solutions of technological problems. Technological methods currently applied in Soviet and non-Soviet industries and methods of applying theoretical considerations in production processes are described. There are 324 references, 235 of which are Soviet, 49 English, 32 German, 3 French, 2 Czech, 2 Chinese, 1 Danish.

Card 1/14

Ceramics

384

TABLE OF
CONTENTS:

Foreword

3

SECTION II. BASIC CERAMIC RAW MATERIALS

Ch. 1. Clay and Kaolin. Clay-forming Minerals. Chemical and Mineral
Composition

Classification characteristics of clays	1.5
Conditions for clay formation	5
Principal clay-forming minerals	6
Admixtures in clays	8
Chemical composition of clays	17
Characteristics of kaolin	20
Uses of clay and kaolin in relation to their chemical composition	28
	31

Ch. 2. Surface Properties of Clay Particles

Ion exchange	36
Elastic - plastic properties of clays	38
	42

Card 2/14

AVGUSTINIK, A.I.; KOZLOVSKIY, L.V.

Strength of ionic bonds in pyrophyllite after firing. Zhur.prikl.
khim. 29 no.7:1035-1040 J1 '57. (MIRA 10:10)
(Chemical bonds) (Pyrophyllite)

Augustinik, A.I.

AUTHORS: Avgustinik, A.I., Kozlovskiy, L.V., Kononov, P.F. 76-11-18/35

TITLE: On the Behavior of Muscovite When Heated (K voprosu ob otnoshenii muskovita k nagrevaniyu)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol.31, Nr 11, pp.2495-2500 (USSR)

ABSTRACT: Here Karelian muscovite with a comparatively high heat- and chemical resistance was investigated. Its chemical composition was as follows: SiO_2 - 44.80, TiO_2 - 0.25, Al_2O_3 - 35.54, Fe_2O_3 - 3.05, CaO - 0.32, MgO - 1.37, Na_2O - 1.58, K_2O - 8.82, losses by annealing - 4.70%. Individual rutile- and chlorite crystals were admixed. The following is shown: 1.) Separation of water in muscovite dehydration takes place in two stages: up to $400-450^\circ$ 10 - 12%, and in the interval between 600 and 900° the most essential part is separated, which is constitutionally connected with the muscovite crystal lattice. 2.) Expansion of the sample, which is produced from finely ground muscovite, also takes place in two stages: a) at 400° (about 2% of the initial length), b) at $850-900^\circ$ (about 1.7% of the initial length), which can be brought into connection with the separation of water in this stage. 3.) The action of a 6% hydrochloric acid solution upon the muscovite, which was annealed at different temperatures, proves the existence of an

Card 1/2

On the Behavior of Muscovite When Heated

76-11-18/35

optimum of solubility of the pure clay component of the muscovite at 800°C because of a considerable weakening of the inter-ion linkages at this temperature. The absolute quantity of R_2O_3 -oxides passing over into the solution is, however, not large. This is connected with the closed structure of the muscovite lattice packet. 4.) Judging from the refraction indices of the muscovite annealed at 1000°C , an isotropic substance, and with 1100°C a new crystal phase with $N_g=1.540$ and $N_p=1.536$ occur. 5.) The data of the structural analysis prove that, up to a temperature of 1000°C , the muscovite lattice undergoes no change, but that it is completely destroyed beyond 1100°C , and that a phase $\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$, which, at a temperature of 1300°C decomposes into corundum, "mullite" and glass, is formed. There are 3 figures, 2 tables, and 20 references, 12 of which are Slavic.

ASSOCIATION: Institute for Technology imeni Lensovet, Leningrad
(Tekhnologicheskii institut im. Lensoveta, Leningrad)

SUBMITTED: July 23, 1956

AVAILABLE: Library of Congress

Card 2/2

AVGUSTENIK, A. I.

"Significance of Clay Study for Their Use in Ceramics,"

paper distributed at the International Clay Mineralogy Congress in Brussels, Belgium,
1 - 5 Jul 58.

Comment: B-3,116,859.

1
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AVGUSTIN, A. I. Prof.,

"The Automation of High-voltage Insulators manufacture".

report presented at the First Technical Conference on the Introduction of New
Techniques into the Electrical Insulator Industry, 12-15 Mar 1958, State Sci.
Tech. Committee of Council of Ministers of USSR.

AVGUSTINIK, A.I., prof.

Porcelain. Khim. nauka i prom. 3 no.1:83-92 '58.
(Porcelain)

(MIRA 11:3)

5(1,2)

AUTHORS:

Azimov, I., Avgustinik, A. I.

SOV/153-58-4-14/22

TITLE:

Investigation of White Titanium Enamel on Ceramics Produced From Loess-Type Loams (Issledovaniye beloy titanovoy emali po keramike, izgotovlennoy iz lessovidnykh suglinkov)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 4, pp 83-90 (USSR)

ABSTRACT:

The yellow color of the products limits the wide applicability of loess as facing ceramics. In Central Asia there are, however, unlimited loess deposits. To cover this unpleasant yellow shade damping glazing enamel must be used. The authors investigated titanium compounds as dampers. The chemical composition of the loess and of the used materials from 4 deposits are given in a table (Page 83). The plates produced from the molten material were immersed into a glazing suspension and then were rapidly dried. The samples then were burned for 1 hour at 1000° in the silicon carbide furnace. After long experimental work a recipe for glazing enamel was found having the best properties from the visual point of view (gloss, color, deliquescence). The molecular and material composition are given. With it the influence exerted

Card 1/4

*Leningrad Technological Inst in Leningrad - Chair
of Ceramic Enterprises*

Investigation of White Titanium Enamel on Ceramics
Produced From Loess-Type Loams

SOV/153-58-4-14/22

by all components, as of fluorine, phosphoric anhydride, barium and lithium oxide were investigated by the determination of the quantitative indices. Besides, the phase composition of the enamel damper was qualitatively determined. As the traditional methods of determining the meltability of glazings and enamels (according to the deliquescence and the melting of the filament) do not permit it to classify the behaviour of glazing on the product the authors used the method of the Dulevskiy krasochnyy zavod (Dulevskiy Color Plant)(Ref 1). Figure 1 shows the cone (I) that served for the experiment as well as the drops (II,III) formed from it on heating. The deformation was investigated and the temperature of the corresponding moments was measured. The reflection coefficient (of the white color and of the gloss), the reflection spectra as well as the intensity of the yellow color, the surface tension, and the heat resistance were also determined. The enamels were also radiographically investigated. The influence of the following oxides on the physico-chemical properties of titanium enamels was determined: Na_2O , K_2O , CaO , MgO , ZnO , Al_2O_3 , Fe_2O_3 , SiO_2 , B_2O_3 , and TiO_2 .

Card 2/4

Investigation of White Titanium Enamel on Ceramics
Produced From Loess-Type Loams

SOV/153-58-4-14/22

The nature of the damping crystalline phase of the titanium metals was explained. At

$$\text{TiO}_2:\text{CaO} \leq 1.43$$

the precipitated crystalline phase consists of titanite only; if the content of TiO_2 is higher, also titanium dioxide from which enamel receives the yellow color is precipitated. From titanite, on the other hand, the white color is obtained. For practical use the authors recommend a white enamel 36, the instructions for its production being mentioned as well as its composition and properties. There are 8 figures, 1 table, and 1 Soviet reference.

Card 3/4

5(2)

AUTHORS:

Kachalova, L. P., Avgustinik, A. I.

007/153-58-5-12/20

TITLE:

Investigation of Kermet Based on ZrO_2 -Cr (Issledovaniye kermeta na osnove ZrO_2 -Cr)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 5, pp 70-75 (USSR)

ABSTRACT:

As, according to the opinion of some scientists, there exists the possibility of stabilizing ZrO_2 by means of titanium (Ref 1) it was interesting to check if metallic chromium can be used for this purpose. A kermet produced in this way could combine the properties of a highly refractory oxide with the high thermal conductivity of the metal component. The vibration-ground components mentioned in the title were carefully mixed at a ratio of ZrO_2 : Cr = 90 : 10 to 30 : 70 (Table 1). Bars were pressed from it (pressure 1000 kg/cm^2). These bars were burned in electro-vacuum furnaces TVV-2 at a temperature increase of $500^\circ/\text{hour}$ up till 1750° , and then were cooled for 10 minutes. To explain the usability of the said kermet for the production of the terminals of thermocouples for the

Card 1/3

SOV/153-58-5-12/26

Investigation of Kermet Based on ZrO_2 -Cr

temperature measuring of molten metals the bars were immersed into molten steel at 1650° as well as brass at 1070° for 0.5 minutes, and then were quenched in air or cold water. The properties of the samples in dependence upon the composition are given by table 2. The experimental results make possible the following conclusions: 1) Kermet of high mechanical strength can be produced from ZrO_2 in a mixture with chromium powder (20% and more). The reason is to be found in the fact that the metal component compensates the change in volume formed in polymorphous transformations of monoclinic ZrO_2 at high temperatures. This causes a stabilization-like effect. 2) A previous partial oxidation of chromium in the samples as well as an addition of 3% Cr_2O_3 promoted the strength in the samples with 10% chromium; the mechanical strength, however, not the thermal stability, is increased (Table 3). 3) A microscopic (Figs 1-3) and radiographic analysis (Table 5) proved in kermet no other formations than the two phases of monoclinic ZrO_2 and metallic chromium. 4) The individual kermet compositions (Table 1) prove to be thermally stable in steel (up to 20 temperature changes)

Card 2/3

307/153-58-5-12/28

Investigation of Kermet Based on ZrO_2 -Cr

and brass (more than 20 temperature changes) melts at 1650 or 1020°, respectively. 5) Kermet from ZrO_2 -Cr is not wetted by the molten metal. Its solubility in the metal depends upon its composition: at a chromium content of more than 50% the solubility is considerably increased. 6) Compositions Kh-40 (60% ZrO_2) and Kh-50 (50% ZrO_2) displayed the best mechanical strength and the highest thermal stability; they may be recommended for industrial use. 7) Metallic chromium is evaporated on its burning in vacuum. For this reason the burning in vacuum must be carried out without any time of stay or under protective gas. There are 5 figures, 5 tables, and 1 reference.

ASSOCIATION: Leningradskiy tekhnologicheskii institut imeni Lensovet, Kafedra tekhnologii keramiki (Leningrad Technological Institute imeni Lensovet, Chair of the Technology of Ceramics)

SUBMITTED: November 4, 1957

Card 3/3

AUTHOR: Avgustinik, A. I., Professor, Doctor of SOV/72-58-9-20/20
Technical Sciences

TITLE: Bibliography (Bibliografiya)

PERIODICAL: Steklo i keramika, 1958, Nr 9, pp 47 - 48 (USSR)

ABSTRACT: This is a review of the "Fourth Compilation of papers reporting on the work of the Chair of Silicate Technology at the Prague Institute of Chemical Technology (a Publication of the Building Commission)". This work was published in Prague in 1957. It was edited by Professor Doctor Rudolf Barta and includes 23 original papers.

Card 1/1

KACHALOVA, L.P.; AVGUSTINIK, A.I.

Study of a cermet based on ZrO_2 - Ti. Trudy LTI no. 46:94-102
'58. (MIRA 14:4)
(Ceramic metals) (Zirconium oxide)
(Titanium)

AVGUSTINIK, A.I.; LOGINOV, V.M.

Increase in rate of phosphorus formation. Zhur. prikl. khim. 31
no.8:1150-1160 kg '58. (MIRA 11:10)
(Phosphorus)

AZIMOV, I.; AVGUSTINIK, A.I.

Using dolomite as an opacifying material. Zhur. prikl. khim. 31
no.10:1599-1601 O '58. (MIRA 12:1)
(Enamel and enameling) (Dolomite)

18.6100

66003
SOV/81-59-8-28191

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 8, p 374 (USSR)

AUTHORS: Kachalova, L.P., Avgustinik, A.I.

TITLE: An Investigation of a Ceramic Metal Based on ZrO₂-Ti

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lenseveta, 1958, Nr 46, pp 94 - 102

ABSTRACT: Some properties of ceramic metals based on ZrO₂-Ti have been studied with the aim of manufacturing from them endpieces for thermocouples applicable to the measuring of temperatures of molten metals. Samples of various compositions with a Ti content of 2 - 20% were prepared from masses with a humidity of 6% by the method of dry pressing at a specific pressure of 1,000 kg/cm². The burning of the samples up to a temperature of 1,700°C was carried out in the electrovacuum furnace with a tungsten heater. It has been established that insignificant additions of titanium metal make it possible to obtain samples with a high mechanical resistance (a Ti addition in the amount of 4% and more makes it possible to obtain a ceramic metal with a bending resistance of up to 2,500 kg/cm²). It has been established by roentgenographic investigation that the partial formation of solid solutions of TiO in ZrO₂ of cubic structure does not prevent the

Card 1/2

66003

An Investigation of a Ceramic Metal Based on ZrO_2 -Ti

SOV/81-59-8-28191

reversible inversion of ZrO_2 taking place in the ceramic metal within the range of 1,100 - 1,200°C. As a result of the longlasting thermal treatment the disintegration of the cubic structure was detected. The prevention of the inversion disintegration of products made of ZrO_2 in the presence of Ti differs from the commonly adopted stabilization of ZrO_2 by additions of CaO, MgO. It consists in the compensation of volume changes, accompanying the inversion of ZrO_2 during heating, by volume changes of the metal. It is noted that in view of the weak resistance against oxidation, the use of the ceramic metal as material for the endpieces of thermocouples is possible only in the case of short-time temperature measurements in a brass melt.

G. Maslannikova

Card 2/2

AVGUSTENIK, A. I.; SINTSOVA, I. T.

"On a study of crystal-glass ceramics."

paper submitted for 3rd Joint Meeting, Netherlands Ceramic Society and the British Ceramic Society, Bristol, 5-8 July 1965.

Institut Khimii Silikatov, Akademii Nauk SSSR, Leningrad.

5 (1)

AUTHORS:

Azimov, I., Avgustinik, A. I.

SOV/153-2-1-15/25

TITLE:

Determination of the Surface Tension of Some Silicate Melts by the Method of the "Floating Plate With a Sitting Drop"
(Opređeleniye poverkhnostnogo natyazheniya nekotorykh silikatnykh rasplavov metodom "plavayushchey plastinki s sidyashchey kapley")

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 1, pp 73 - 81 (USSR)

ABSTRACT:

This method (known since the last century, Refs 3, 4) was employed by many authors with some variations (Refs 5-10). It is, however, not very accurate (Ref 1). It is apparently impossible to obtain drops with a shape so regular that the results could be reproduced. Further, the authors measured the density of the glass powder at low temperature, which deviates considerably from that of cold and hot drops (Ref 1). The authors therefore employed a special method whereby a regular drop was obtained. Further, they determined its density in melted state, measured its data more accurately, and simplified the method of calculating the surface tension of the melt by setting up a nomogram. First, formulas are discussed (Fig 1). Figure 2 shows a photo-

Card 1/3

Determination of the Surface Tension of Some Silicate
Melts by the Method of the "Floating Plate With a
Sitting Drop"

SOV/153-2-1-15/25

graph of the drop with the data utilized for determining the surface tension. The authors describe the shape of the drop, the apparatus used for recording its data (Fig 3), and the afore-mentioned nomogram (Fig 5) together with the calculation method. Table 1 gives a comparative illustration of the reproducibility of the experimental results according to the σ -values of sodium silicate. Afterwards, the results of the measurement of the surface tension of some titanium enamels are then listed and discussed. On the basis of the results the authors arrived at the following conclusions: (1) The method of determining the surface tension of the silicate melt can be considerably improved, i.e. by measuring the photograph of a drop (by means of an instrumental microscope) which is located on a small graphite plate floating on melted glass. The degree of accuracy can be improved up to 2-3%. (2) A nomogram (Fig 5) can be employed for determining the density of the melted drop as well as for measuring the surface tension at the value $\beta = 2 - 4$. This nomogram was set up according to tabulated results obtained by F. Boshforth and

Card 2/3

Determination of the Surface Tension of Some Silicate Melts by the Method of the "Floating Plate With a Sitting Drop" SOV/153-2-1-15/25

J. C. Adams (Boshfort and Adams, Ref 4) and supplemented by results of calculations made by the authors. (3) On the strength of the investigation of titanium enamels with a low boron content it was found that the nature of the eliminated crystalline phase apparently does not affect the surface tension very much. (4) The value σ is reduced much more by the addition of Li_2O in small concentrations (of about 1%) than by B_2O_3 . There are 5 figures, 2 tables, and 16 references, 4 of which are Soviet.

ASSOCIATION: Leningradskiy tekhnologicheskii institut imeni Lensovet; Kafedra tekhnologii keramicheskikh proizvodstv (Leningrad Institute of Chemical Technology imeni Lensovet, Chair of the Technology of Ceramic Products)

SUBMITTED: March 7, 1958

Card 3/3

AVGUSTINIK, A.I.; DENIKHOVA, T.V.

Changes in disthene subjected to heating. Trudy Inst. stroi. i
stroimat. AN Kazakh SSR 2:216-219 '59. (MIRA 12:10)
(Silicates)

5(1, 2)

SOV/80-32-5-39/52

AUTHORS: Avgustinik, A.I., Loginov, V.M.

TITLE: The Problem of Studying the Tempering of Porcelain

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1154-1157 (USSR)

ABSTRACT: Porcelain insulators which are rapidly cooled after burning have mechanical properties which are 60 - 80% higher than in other products. The reason for the higher resistance is studied here with rods of 12 and 22 mm in diameter, 80 mm long, and discs of 80 mm in diameter. The maximum resistance of the rods was attained by heating to 1,100°C and cooling in a stream of air of 10 m/sec. The discs were heated to 1,100 - 1,200°C and cooled at 5 m/sec. At 10 m/sec the specimens cracked. The electric resistance did not change. The resistance is due to tensions in the surface layers of the products. This was proved by removing the layers by grinding, testing the resistance and by repeated tempering. X-ray analysis was carried out at Giprotsement under the supervision of P. F. Kononov.

Card 1/2

The Problem of Studying the Tempering of Porcelain

SOV/60-32-5-39/52

There are 3 graphs, 2 tables and 7 references, 2 of which are Soviet,
2 American, 2 German and 1 French.

SUBMITTED: October 10, 1958

Card 2/2

5.5320

75694
SOV/80-32-10-43/51

AUTHORS: Petrova, V. Z., Avgustinik, A. I., Konovalov, P. F.,
Konovalova, Ye. P.

TITLE: Brief Communications. Concerning Dissolution of Quartz
in Feldspar Melts

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2351-
2354 (USSR)

ABSTRACT: The vitreous phase of porcelain was studied in order to
determine the effect of the quartz dissolved in it on
the mechanical properties of porcelain. The samples
were prepared by semi-dry pressing under 1,000 kg/cm²
at 7-8% moisture. The samples were disks of diameter
20 mm, thickness 3 mm. A mixture of potassium feldspar
and pulverized quartz was used. The samples were kilned
at 1,200, 1,280 and 1,350° with different holding time
(1, 2.5, 5 and 9 hr). The samples were investigated by:
X-ray quantitative analysis, using pulverized samples,
with chemically pure calcium fluoride as an internal

Card 1/4

Ref: Communications. Concerning Dissolution
of Quartz in Feldspar Melts

75000
307/40-30-10-43/51

standard; microhardness determination, using MFT-3 apparatus; and microscopic investigation, using MIN-8 metallographic microscope. It was shown that quartz content in feldspar melt (referring to porcelain) can be determined by X-ray analysis without the use of an internal standard or by microscopic investigation of the polished sections, which were first etched with a mixture of 9 parts of 10% H_2SiF_6 and 3 parts of 30% HF, and then polished. The microhardness of feldspar melt with dissolved quartz in it is shown in Fig. 3. It was shown that the solubility of quartz in feldspar melt is in direct proportion to the melting temperature; this explains the maximum microhardness of porcelain at $1,280^\circ$ and 9 hr holding (see Fig. 3), since at the lower temperature ($1,200^\circ$) a large quantity of quartz remains undissolved and at a higher temperature ($1,350^\circ$) nearly all the quartz is dissolved. The percentage of quartz dissolved in feldspar melt affects the mechanical properties of porcelain. There are 3 tables; 3 figures;

Card 2/4

Brief Communications. Concerning Dissolution
of Quartz in Feldspar Melts

75694

SOV/80-32-10-43/51

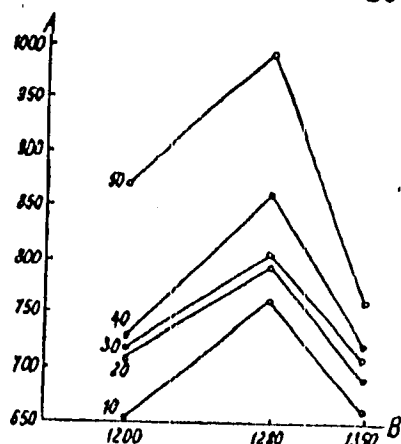


Fig. 3. Effect of kilning temperature on the microhardness, holding for 9 hr. (A) microhardness (in kg/cm²); (B) temperature of kilning (in °C). The figures on the curves show the content of SiO₂ in the samples (in %).

Card 3/4

Brief Communications Concerning Dissolution
of Quartz in Feldspar Melts

75694
SOV/80-32-10-43/51

and 9 references, 4 German, 2 Soviet, 1 Japanese, 2 U.S.
The U.S. references are: Matisovsky, L., J. Am. Cer.
Soc., 40, 9, 299 (1957); Sobe, S. C., Cook, R. Z., J. Am.
Cer. Soc., 34, 5, 145 (1951).

SUBMITTED: June 3, 1959

Card 4/4

83493

15.2210

S/081/60/000/013(I)/011/014
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 13(I), p. 448,
53450

AUTHORS: Avgustinik, A. I., Kozlovskiy, L. V.

TITLE: The Manufacture of Aluminum Oxide Protective Fixtures for High-
Temperature Plunging Thermocouples by Plastic Forming and Casting
Into Gypsum Molds

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensovet, 1959, No. 57, pp. 15-19

TEXT: The author investigated problems of recrystallization sintering of Al_2O_3 by introducing into the composition a small amount of fine and superfine grained mineralizers. They studied vibromilling of commercial Al_2O_3 and preparation of protective jackets for plunging thermocouples up to 500 mm length in the capacity of internal fixtures of high-temperature plunging thermocouples with cermet tips for measuring temperatures up to 1,600-1,650°C. It is established that in the vibromilling of commercial Al_2O_3 for 5-6 hours, the yield of particles of $< 2 \mu$ size is 60 to 70% in dry milling and 90% in wet milling. Pure Al_2O_3 pipes are manufactured by the method of plastic forming

Card 1/2

83493

S/081/60/000/013(I)/011/014
A006/A001

The Manufacture of Aluminum Oxide Protective Fixtures for High-Temperature
Plunging Thermocouples by Plastic Forming and Casting Into Gypsum Molds

with addition of an 18 - 20% solution of polyvinyl alcohol as plasticizer or by
casting alumina dross of 33% moisture and 3.3 pH. The pipes are roasted after
drying, first to 1,200 - 1,250 °C and then to 1,600 - 1,650 °C.

From the authors' summary.

Translator's note: This is the full translation of the original Russian
abstract.

Card 2/2

S/081/60/000/013(I)/014/014
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 13 (I), p. 449,
53465

AUTHORS: Avgustinik, A. I., Gropyanov, V. M., Ordan'yan, S. S.

TITLE: Manufacture of Disks on Cermet Bonding for the Dressing of Abrasive Tools

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensovet, 1959, No. 57, pp. 103-104

TEXT: Disks for the straightening of abrasive tools are made on brass bonding and have a series of deficiencies. The authors studied the effect of the composition of the ZrO₂ base cermet bonding on the strength and quality of WC disks. An X-ray analysis did not reveal any structural changes in WC grains after roasting. Zones with a higher content of metal from the cermet bonding formed around the WC grains; this promoted the strong fixing of these grains in the bonding. After roasting at 1,700°C, cracks were detected on the lateral surfaces of the disks and the hardness of grains on the surface was somewhat reduced. Apparently, the changes in the hardness of the grains were connected

Card 1/2

S/081/60/000/013(L)/014/014
A006/A001

Manufacture of Disks on Cermet Bonding for the Dressing of Abrasive Tools
with the diffusion of the bonding metal in WC. Better results were obtained by
reducing the roasting temperature.

V. Autko

Translator's note: This is the full translation of the original Russian
abstract.

Card 2/2

83494

9.4174
18.6200

S/081/60/000/013(I)/012/014
A006/A001

Translation from: Referativnyi zhurnal, Khimiya, 1960, No.13 (I), p. 448,
53452

AUTHORS: Avgustinik, A. I., Poppva, I. A., Gropyanov, V. M.

TITLE: Manufacture of Cermet Jackets for Plunging Thermocouples by
Hydrostatic Pressing

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensovet, 1959, No. 57, pp. 107-108

TEXT: The method is described as follows: thoroughly mixed Al_2O_3 (or ZrO_2) powders and powderlike metal (Ti, Cr, etc.) were moistened up to 7% moisture, placed into an elastic rubber mold containing a steel roll, and subjected to water pressure, squeezing the rubber mold. During the pressing the powder was undergoing vacuum fusion. Cermet jackets were roasted in vacuum furnaces. The thermocouples withstood up to 15 heat changes at 1650 to 1,720°C.

V. Autko

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

5.4100
24.1300

83640

S/081/60/000/015/006/p14
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 15, p. 62, # 60558

AUTHOR: Avgustinik, A.I.

TITLE: On the Problem of the Formation of a Crystalline Phase ⁶ From a Vitreous Phase

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensovet, 1959, No. 57, pp. 5-14

TEXT: The author advances and founds the hypothesis that the nucleation of a crystalline phase in a fusion passes through an intermediate state of pre-nucleation groups without interfaces, having the composition of a crystalline phase separating out of the fusion. Pre-nucleation groups are present in the fusion in monometric or dimetric form. The possible dimensions of pre-nucleation groups are calculated using the Thomson equation; according to the calculation the transverse dimensions of pre-nucleation groups in molten quartz are 200-500 Å. The pre-nucleation groups possess considerable mutual mobility of their parts and preserve an excess of free energy ΔF in respect to the nucleus energy level and the vitreous phase. In the case that this portion of free energy is

Card 1/2

83640

S/081/60/000/015/006/014

A006/A001

On the Problem of the Formation of a Crystalline Phase From a Vitreous Phase

liberated, changes in the nature of bonds in the groups occur, which hypothetically pass from associative to coordination-chemical ones. This determines the nucleation in the form of a crystalline lattice.

From the authors' summary

Translator's note: This is the full translation of the original Russian abstract,

Card 2/2

AVGUSTINIK, A. I., VIGDENGAUZ, V. S.

Effect of the composition and amount of glass phase on the sintering and frost-resisting properties of ceramic building materials.

Trudy LTI no.57:77-87 '59.

(MIRA 13:8)

(Ceramic materials)

AVGUSTINIK, A.I.; PETROVA, V.Z.

Investigating the elastic properties of porcelain during heating.
Trudy LTI no.57:97-102 '59. (MIRA 13:8)
(Porcelain)

AVGUSTINIK, A. I., POPOVA, I. A., GROFTANOV, V. M.

Manufacturing protective cermet jackets for thermocouples by
plastic molding, stretching, and casting. Trudy LTI no. 57:105-106
'59. (MIRA 13:8)
(Thermocouples) (Ceramic metals)

[illegible][illegible]

Vitreous State (Cont.)	807/5035
Relation Between the Structure and Properties of Glasses	
Yevseyev, K.S. General Problems of Structure and Properties of Glasses	57
Dobkin, L.I. Activity of Silica Glass Properties in Connection With Their Structure	49
Zakharov, M.A. Vitreous Systems and the Problem of Glass Structure	55
Nature of the Chemical Bond and Structure of Glasses	
Myiller, R.L. [Doctor of Chemical Sciences]. Chemical Properties of Polymeric Glass-Forming Substances and the Nature of Vitrification	61
Goryunova, M.A., and B.F. Kolomiets. Problem of Vitrification Regularities in Chalcogenide Glasses	71
Tarasov, V.V. Glass as a Polymer	79
Card 6/22	
Vitreous State (Cont.)	807/5035
"Crystalline-Structure of Glass"	
Belov, N.Y. (Academician). Glass Structure in the Light of the Crystal Chemistry of Silicates	91
Discussion	96
FUSED SILICA. MECHANISM OF VITRIFICATION	
Fused Silica	
Avetisyan, A.J. On the Problem of Crystal Phase Formation From Fused Silica	115
Botvinnik, O.K. Vitrification Kinetics and Glass Structure	120
Mel'nikenko, L.G. On the Problem of Forming the Glass Structure During the Melting Process	123
Lepitskiy, P.M., O.A. Fein, and V.I. Murzin. Anisotropy of Electrical Conductivity of Fused Silica and Borates in Flow	125
Card 7/22	
Vitreous State (Cont.)	807/5035
Yemel'nikov, N.A. On the Problem of Glass Forming	123
Cherkulin, V.A., and G.A. Fein. Electrolysis of Liquid Aluminosilicates	129
Spyralin, Y.T., and G.A. Fein. Thermodynamic Properties of Fused Silica of $\text{CaO-Al}_2\text{O}_3\text{-SiO}_2$ and $\text{CaO-Al}_2\text{O}_3\text{-SiO}_2$ Systems	130
Discussion	131
Mechanism of Vitrification	
Vol'kenshteyn, M.Y. On the Structural and Kinetic Characterization of the Vitreous State	132
Anufriyev, Ye.Y., and M.V. Volkovskiy. On the Fluorescence Method of Studying the Vitrification of Polymers	134
Bol'mina, I.A. Optical Activity and Vitrification	142
Card 8/22	

BUDNIKOV, Petr Petrovich, akademik, zasluzhennyy deyatel' nauki i tekhniki, trizhdy laureat Stalinskoy premii; KUKOLEV, G.V., prof., doktor tekhn.nauk, otv.red.; BEREZHNOY, A.S., red.; ~~AYGUSTINIK, A.I.~~, prof., red.; BUTT, Yu.M., prof., red.; MCHEDLOV-PETROSYAN, O.P., prof., red.; GINSTLING, A.M., prof., red.; SMELYANSKIY, I.S., prof., red.; ZNACHKO-YAVORSKIY, I.L., kand.tekhn.nauk, red.; ZHIKHA-REVICH, S.A., kand.tekhn.nauk, red.; KRECH, E.I., kand.tekhn.nauk, red.; MATVEYEV, M.A., kand.tekhn.nauk, red.; ROYAK, S.M., kand.tekhn.nauk, red.; NEMCHENKO, Ye.M., red.izd-va; MARCHUK, G.T., red.izd-va; KADASHEVICH, O.A., tekhn.red.

[Selected works] Izbrannyye trudy. Kiev, Izd-vo Akad.nauk USSR, 1960. 571 p. (MIRA 13:7)

1. AN USSR; chlen-korrespondent AN SSSR (for Budnikov). 2. Chlen-korrespondent AN USSR (for Bereshnoy).
(Silicates) (Ceramic materials) (Refractory materials)
(Binding materials)

82319

S/063/60/005/002/002/006

A003/A001

18.6100

AUTHOR: Avgustinik, A. I., Professor

TITLE: Ceramic Metals ¹⁵

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva im. D. I. Mendeleeva, 1960, Vol. 5, No. 2, pp. 156-168

TEXT: In the production of ceramic metals metal powders are obtained by the reduction of metal oxides by carbon, hydrogen or carbides. ¹⁴Cr, ¹⁴Ti, ¹⁴Ni and ¹⁴Co are the metals most suitable as binding materials. Recently binary systems of UO₂ with ¹⁴BeO, ¹⁴MgO and ¹⁴Al₂O₃ were studied (Ref. 79). The oxides mostly used in ceramic metals are BeO, molten MgO, Al₂O₃, Y₂O₃, ZrO₂, ThO₂. Among the carbides the best results are obtained with WC, on the base of which a large group of hard cutting alloys was developed (Ref. 15). Ceramic metals on the base of TiC with a binding material containing Mo have a great future. Effort is directed on increasing the scale-resistance of ceramic metals. Attention is drawn to B₄C which is used in the manufacture of control rods of atomic reactors. It is necessary to divide the two isotopes of boron, B¹⁰ (4,010 barn) and B¹¹ (50 mbarn), due to their different cross section in the capture of thermal neutrons. Among the borides

Card 1/3

82319

S/063/60/005/002/002/006
A003/A001

Ceramic Metals

ZrB_2 has a good heat-resistance and is indestructible in melts of copper and brass. It is used in jackets of thermocouples and electrodes for the electrolysis of melts. R. B. Kotel'nikov (Ref. 39) investigated the conditions for the formation of continuous series of solid solutions of carbides, nitrides and silicides and the probability of formation of these series within borides. BN has a structure similar to that of graphite but differing from it by alternating layers of boron atoms. It is used as lubricant in induction furnaces and in crucibles with a heat-resistance of up to $3,000^\circ C$. The following silicides are mostly used due to their refractoriness: $ZrSi_2$ ($1,700^\circ C$), $NbSi_2$ ($1,950^\circ C$), $TaSi_2$ ($2,200^\circ C$), $MoSi_2$ ($2,030^\circ C$), WSi_2 ($2,165^\circ C$). It was shown (Ref. 36) that interatomic interaction reduces the capacity of relaxation of elastic tensions. Ceramic metals are made, therefore, of components with low interatomic interaction, which have a not very large mass of structural complex, thus increasing their resistance to heat impact and reducing their brittleness (Ref. 37). A. A. Bochvar found a relation between the elastic-plastic properties of the "interstitial phases", their structure and the thermophysical characteristics which makes it possible to improve the heat-resistance of ceramic metals (Ref. 38). If a metal is used as binding material, the wettability of the solid part by the metal is very important. The specific surface (without allowance made for the pores) is determined, therefore, by

Card 2/3

Ceramic Metals

82319

S/063/60/005/002/002/006
A003/A001

B. V. Deryagin's method (Ref. 41). Formulae are cited for expressing the adhesion of the liquid to the solid body. The wetting of the solid phase by the melt is improved in proportion to an increase of A. F. Kapustinskiy's crystallochemical potential (Refs. 49, 50). V. A. Presnov (Ref. 51) investigated the mechanism of the formation of a durable bond between a metal and a material of ceramic nature. The tensions in a soldered joint between metal and ceramics were also calculated (Ref. 58). The wetting properties of various materials are discussed. In the preparation of the initial materials air separation is used to obtain powders with a particle size of 5-14 μ and less. A geometrical calculation (Ref. 69) has shown that a complete filling of the cubic lattice is obtained by balls with a radius r_1 52.5%, r_2 20.5%, r_3 3.1% and smaller fractions 24.2%. Various methods of moldings are reviewed. A mold for pressing ceramic metal casings for thermocouples designed by I. A. Popova and V. M. Grapyanov is shown in a diagram. Calcination of ceramic metal articles is carried out in a vacuum of 10^{-4} mm Hg. A furnace for research purposes of the Moscow plant "Platinopribor" of the TEB-4 (TVV-4) type with a 50 kw autotransformer and a temperature of up to 2,500°C is mentioned. There are 7 tables, 4 figures and 79 references: 43 Soviet, 15 American, 13 English, 7 German and 1 French.

Card 3/3

15.2510

28022

S/081/61/000/015/022/139

B101/B110

AUTHOR: Avgustinik, A. I.

TITLE: Formation of a crystalline phase from a silicate melt

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 15, 1961, 56-57. abstract
15B 403 (Sb. "Stekloobrazn. sostoyaniye", M.-L., AN SSSR,
1960, 115-119, Diskus., 131)

TEXT: The author checked the assumption that a silicate melt might contain formations of stoichiometric composition representing the primary products of the reaction between the components (Avgustinik, A. I. "Tr. LTI in. Lensoveta", vyp. 57, Goskhimizdat, L., 1959). He studied the crystallization of a melt which corresponded to the composition of teniolite ($2\text{MgO} \cdot 4\text{SiO}_2 \cdot \text{KF} \cdot \text{LiF}$). The crystal formation was controlled by ionization X-ray analysis. The infrared absorption spectra of the glasses were taken. It was concluded that in the melt (and also in the glasses) groups existed with the same characteristic bonds as in teniolite crystals. In contrast to crystals, these substances (prenuclear groups)

Card 1/2

Formation of a crystalline phase ...

28022

S/081/61/000/015/022/139

B101/B110

have not yet the features of a phase, i.e., no parting planes and no constant parameters which are characteristic of a crystal lattice.
[Abstracter's note: Complete translation.]

JK

Card 2/2

P/015/61/000/009/002/002
D001/D101

AUTHOR: Avgustinik, A. I.

TITLE: On mineralizers in silicates technology

PERIODICAL: Szklo i ceramika, no. 9, 1961, 266-269

TEXT: The author discusses the influence of mineralizing agents on various processes and makes reference to a large selection of specific literature. At the beginning, the author reviews the work of several investigators. It is known that the introduction of alloy additions to metals causes an increase of initial tension of metal flow, its hardness or heat resistance. Similar phenomena are observed in silicates when an addition of small quantities of NaCl or $(\text{NH}_4)_2\text{SO}_4$ stimulates glass formation and an addition of Li_2O changes characteristic glass properties, etc. When investigating the mineralizers' action, usually two goals are set: reduction of the material's sintering temperature and increase of its sintering grade. By the introduction of small additions to certain oxide- and siliceous compounds, investigations can be extended to fire resistance, strength and thermal resistivity of same. The selection of such additions should be supported by a

Card 1/3

On mineralizers in ...

P/015/61/000/009/002/002
D001/D101

theoretical background as for instance, the dislocation theory. In principle, the action of mineralizers can be investigated from the energetics point of view, aiming for the reduction of free energy of the system in three stages: before melting, during the process of melting, and at the crystallization stage. The "before melting" process can be described as progressing in three steps: (1) superficial self-diffusion of ions; (2) mutual bulk diffusion of melt's initial phase ions with mineralizer ions (mostly of the latter ones); (3) edge dislocation of ion groups. This is followed by a melting process, defined as the change of correctness in the spacing of the atoms. Properties and the structure of melts especially of glass were already extensively investigated by various scientists. Some investigators try to obtain the desired crystalline phase by application of mineralizers, contrary to glass making experts, who, by using small additions, also try to prevent crystallization and to maintain glass optical homogeneity. The introduction of an addition inactivating or promoting the formation of eutectic compounds is one of the ways to obtain transparent glass from easily crystallizing melts. The third stage of mineralizer action, the crystallization of the new phase, can be presented as progressing equally well without participation of melt in quantities determinable by modern methods, or with the melt. Obviously re-crystallization without or with the melt can be investigated as separate processes. ✓

Card 2/3

On mineralizers in ...

P/015/61/000/009/002/002
D001/E101

The former proceeds within the initial phase, while during the latter one a new phase develops. Therefore, from the thermodynamics point of view, both processes are entirely different ones. The existing theories of ideal crystal growth, the molecular-kinetic one propagated by Kassel-Stransky and the dislocation theory, are not yet exploited in the sphere of producing crystals in silicates. The following Soviet-bloc scientists are mentioned in this article: A. A. Baykov, N.N. Sinelnikova, L. I. Kariakina and Suranova. There are 4 photos, 1 table, 1 graph and 20 references including 27 Soviet-bloc and 10 non-Soviet-bloc references. The four most recent references to English language publications read as follows: H. Blumenthal, R. Silverman, Journ. Metals 7,2,317-322, 1955; N. P. Allen, W. Carrington, J. Inst. Mat. 82, p 2, 1954; G. A. Laydon, Mc Quorri, J. Am. Ceram. Soc. 42, 2, 89-92, 1959; N. A. Hedvall, Glas and Ceramic Bull. India, 7, 1, 29-33, 1960. [Abstracter's note: This article was translated from Russian into Polish; the author's reasoning is not clearly reproduced].

ASSOCIATION: Leningradskiy Tekhnologicheskii Institut im. Lensovieta, Katedra Tseramiki (Leningrad Technological Institute imeni Lensoviet, Chair of Ceramics).

Card 3/3

P/015/61/000/012/002/003
D002/D101

AUTHOR: Avgustinak, A. I.

TITLE: The structure of porcelain

PERIODICAL: Szkło i ceramika, no. 12, 1961, 364-370

TEXT: The article is a translation of a Russian-language report (Translator: D. Kleinrock) presented by the author at the Akademia Górniczo-Hutnicza (Academy of Mining and Metallurgy) in Kraków on the occasion of the Dzień Hutnika (Metallurgist's Day). The article describes the structure, composition, and production of high-grade porcelain, especially the feldspar porcelain group. Soviet personalities mentioned are: Sinelnikov, Nazarenko and Razumova. There are 3 figures, 2 tables and 122 references: 86 Soviet-bloc and 36 non-Soviet-bloc. The four most recent references to English language publications read as follows: Rigterink M., J. Am. Cer. Soc. Electronic P. II, 501-506, 1958; Rigterink M., J. Am. Cer. Soc. 41, 11, 500-506, 1958; Lachman L., Everhart H., J. Am. Cer. Soc. 39, 1, 1958; Buch E., Hummel P., J. Am. Cer. Soc. 41, 6, 1958. ✓

Card 1/2

The structure of porcelain

P/015/61/000/012/002/003
D002/D101

ASSOCIATION: Leningradskiy Tekhnologicheskii Institut im. Lensovet, ✓
Kafedra Keramiki (Leningrad Technological Institute
imeni Lensovet, Chair of Ceramics)

Card 2/2

31150

S/196/62/000/002/002/023

E194/E155

15, 1130

AUTHORS: Avgustinik, A. I., and Petrova, V. Z.

TITLE: Structural stresses in electrical porcelain

PERIODICAL: Referativnyy zhurnal, Elektrotehnika i energetika no. 2, 1962, 6, abstract 2B 30. (Tr. Leningr. tekhnol. in-ta im. Lensovet, no. 52, 1961, 118-125).

TEXT: When porcelain is being cooled after firing, internal stresses are set up by the presence in it of crystalline phases (mullite, quartz), vitreous phases and gas-filled pores which differ in their coefficients of thermal expansion. Formulae which have been proposed for determining stresses in silicates require knowledge of the modulus of elasticity E , Poisson's ratio μ , the coefficient of linear expansion α , and the mechanical strength. The object of the present work was to establish a relationship between the elastic properties of the porcelain and its phase composition. The specimens were of the following dimensions: for the determination of E - 300 mm long, 10 mm diameter; for the determination of α - 70 mm long, 8 mm diameter. The specimens were prepared by drawing they

Card 1/3

Structural stresses in

34156
S/196/62/000/002/002/023
E194/E155

were made of Kyshtym kaolin, feldspar, Luga quartz sand, and in some cases chamotte made of fired kaolin or alumina. When the untreated specimens are heated from 20 to 150 °C there is an increase in E because of the removal of traces of hygroscopic moisture. On further raising the temperature to 570 °C E falls. At a temperature of 570 °C the specimens had the lowest mechanical strength because the clay components were dehydrated. In the temperature range 570-860 °C E first increases sharply by 70% and then more slowly. Similar changes in E are observed in fired porcelain samples except that in the range 20-600 °C there is little noticeable change. When the body of the porcelain contains only a single crystalline component (mullite or silica) E increases smoothly, whilst when there are two crystalline phases (mullite and quartz) E commences to rise sharply from a temperature of 560-600 °C. Hysteresis effects were observed on measuring E and ν during heating and cooling; as the temperature was reduced from 600 to 20 °C the values of E and ν were greater than with rising temperature. Measurements of changes in E and ν on heating.

Card 2/3

Structural stresses in

34156
S/196/62/000/002/002/023
E194/E155

unfired porcelain specimens can be used to determine the quartz content, to study structural stresses in the materials and to indicate polymorphous conversions of quartz.
4 literature references.

[Abstractor's note: Complete translation.]

Card 3/3

X

S/081/62/000/004/047/087
B150/B138

AUTHORS: Avgustinik, A. I., Petrova, V. Z.

TITLE: Ultrasonic pulse method of investigating the elastic properties of electrical porcelain

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 379, abstract 4K210 (Tr. Leningr. tekhnol. in - ta im. Lenseveta, no. 52, 1961, 134 - 141)

TEXT: The ultrasonic pulse method of determining the modulus of elasticity, modulus of shear and Poisson's ratio is found to be reliable for elasticity constant determinations, with an accuracy up to 1%. The phase composition of the porcelain determines the value of the

elasticity constants. The substitution of SiO_2 by Al_2O_3 increases the elasticity constants of the vitreous phase and of the body as a whole. An SiO_2 content in masses >40 - 50 % leads to a reduction in the moduli of elasticity and shear. Under these conditions however, the microhardness

Card 1/2

Ultrasonic pulse method...

S/081/62/000/004/047/087
B150/B138

of the vitreous phase for these compositions is increased. Reduction of the value of the elasticity constants is attributed to the negative action of the quartz, setting up tensile stresses at the boundary of the quartz-vitreous phase. [Abstracter's note: Complete translation.]

Card 2/2

AVGUSTINIK, A.I.; PETROVA, V.Z.; KASATKINA, I.M.

Effect of α - Al_2O_3 addition on the physicommechanical properties
of feldspar porcelain-type glass phases. Trudy LTI no.59:
40-46 '61. (MIRA 17:9)

AVGUSTINIK, A.I.; SAZONOVA, N.K.; ROZHKOVA, R.A.

Effect of some technological factors on the manufacturing process
of "keramzit" from Cambrian clay. Trudy LTI no.59:47-53 '61.
(MIRA 17:9)

AVGUSTINIK, A.I., prof.

Formation of porcelain. Zhur. VkhO 6 no.6:663-669 '61.

(MIRA 14:12)

(Porcelain)

S/080/62/035/010/005/012
D204/D307

AUTHORS: Avgustinik, A.I., Vigdergauz, V.S. and Zhuravlev, G.I.

TITLE: Electrophoretic deposition of ceramics from their suspensions and the calculation of the yields of the deposits

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 10, 1962, 2175-2180

TEXT: The mechanisms of the formation of electrical double layers are summarized, for the case of a finely dispersed solid phase suspended in a liquid, focusing the interest on the mechanism in which ions are adsorbed on the solid particles, since this is of the greatest importance for the purpose of electrophoretic deposition. The effects of electrolyte additions are discussed. The present authors studied the deposition of refractory coatings on metals, to determine whether the electrophoretic method is effective, in a glass vessel containing an electrode a Ni cylinder 19 mm in diameter and 70 mm long, and a coaxially placed 0.5 mm Cu wire, 60 - 70 mm

Card 1/3

Electrophoretic deposition ...

S/080/62/035/010/005/012
D204/D307

long. The deposition took place on the Cu wire, the yields being determined by weighing. The suspensions were prepared from 5 - 6 μ and smaller particles ultrasonically dispersed in 96% EtOH, and 1% HCl was used as the electrolyte. The yields were found to increase almost linearly with the time of deposition (at a voltage of 11 v) and with applied voltage (for 4 sec periods of deposition), the times of deposition being controlled by a relay. The yields (weights) of the deposit are shown to be given by

$$Y_l = \frac{u \epsilon C t l}{3 \ln \frac{r_1}{r_2} \eta} \quad (8)$$

where ξ is the electrokinetic potential, ϵ the dielectric constant of the medium, C the particle concentration, t the time of deposition, r_1 and r_2 the radii of the inner and outer electrodes of length l , and η is the viscosity of the medium. [Abstracter's note: u is not defined but probably a misprint for U , the applied voltage]. The experimental yields were generally higher than those calculated by the formula, for the following conditions: (1) $U = 11$ v, Card 2/3

Electrophoretic deposition ...

S/080/62/035/010/005/012
D204/D307

t varying from ~ 5 to 100 seconds, and (2) $t = 4$ sec, U varying from ~ 2 - 14 v. The discrepancies (~ 15%) are discussed. The process is considered an effective one for the deposition of high quality ceramic coatings. There are 3 figures.

SUBMITTED: April 3, 1962

Card 3/3

S/080/62/035/010/011/012
D204/D307

AUTHORS: Avustinik, A.I., Vigdergauz, V.S. and Zhuravlev, G.I.

TITLE: The effect of electrolyte additions on the electrophoretic deposition of ceramic masses from suspensions

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 10, 1962, 2338-2341

NOTE: The present work is a continuation of an earlier study (ZhKhKh, 35, 10, 2175 (1962)), devoted to the electrophoretic deposition of ceramic coatings from suspensions. The importance of the electrokinetic potential of the particles on the process of deposition is underlined. It is concluded that this quantity is in turn controlled by the formation of ionic double layers, by selective adsorption of similarly charged ions on the solid phase, i.e. by the addition of electrolytes. The effects were studied of $\text{Th}(\text{NO}_3)_4 \cdot 8\text{H}_2\text{O}$, HCl , HNO_3 , H_2SO_4 and $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, on suspensions of ZrO_2 , $\text{Al}_2\text{O}_3 - \text{SiO}_2 - \text{CaO}$ glass, NbC , and magnesium mica-phlogopite, Card 1/2

The effect of electrolyte ...

S/080/62/035/010/011/012
D204/D307

the suspensions consisting of 2g of the solid particles in 30 cm³ of 96% EtOH. It was found that in general the yields of the deposits (0 to 4×10^{-5} g/cm²) increased sharply to a maximum and gradually fell away as increasing amounts of electrolytes were added (0 - 160×10^{-5} moles). All experiments were carried out with an applied voltage of 12 v and a deposition time of 5 sec. No deposition was achieved with H₂SO₄, or in the absence of electrolytes. The yield maxima correspond to the complete formation of ionic double layers (maximum electrokinetic potentials), which then contract, owing to the effect of oppositely charged ions, when further electrolyte is added, (lowering of the electrokinetic potential). Suitable electrolytes are those in which one ion (e.g. Th⁴⁺, Al³⁺, H⁺) exhibits specific adsorption, and the other possesses a low charge and is not too large (Cl⁻, NO₃⁻). There are 5 figures.

SUBMITTED: April 13, 1962 .

Card 2/2

35409

S/076/62/036/003/008/011
B101/B108

15.2120

AUTHORS: Avgustinik, A. I., and Tauranova, I. S.

TITLE: Relationship between the development of bonds in silicate melts and the dielectric properties of the glasses obtained

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 3, 1962, 608 - 611

TEXT: Mixtures of (1) 15 % Li_2O , 15 % CaO , 70 % SiO_2 , and (2) 40 % CaO , 8 % Al_2O_3 , 52 % SiO_2 were molten, kept at a temperature of 1000 - 1500°C for up to 30 min, and cooled rapidly. The glass obtained was pulverized, pressed in vacuo into tablets with KBr, and the infrared spectrum of these tablets was taken. Bonds characterized by constant bands were found to develop in the melt at 1500°C. For lithium glass these bands were at 9.53, 10.92, and 12.12 μ ; for aluminum glass at 9.61, 10.52, and 10.96 μ . The intensity of these bands increased with prolonged heating and at lower temperature. This is supposed to confirm the hypothesis of a formation of "pre-nuclear" groups (p-groups) in the melt. The X-ray patterns of aluminum glass showed the existence of one crystalline phase: $\alpha\text{-CaO}\cdot\text{SiO}_2$. In crystallized lithium glass, a phase of unknown composition

Card 1/3

Relationship between the ...

S/076/62/036/003/008/011
B101/B108

with the lines 4.61, 3.27, 2.98, 2.69, 2.33, 1.94, 1.55, and 1.37 μ was observed. The dielectric properties of lithium glass were measured 2.5 months after production:

A	B	log ρ		$\tan \delta \cdot 10^{-4}$ at 20°C	ϵ at 20°C
		at 150°C	at 300°C		
1500	0	9.54; 9.73	6.21; 6.43	88.3; 93.4	10.3 ; 9.54
1200	0	7.88; 8.09	5.10; 5.20	93.5; 93.9	9.26; 10.43
1200	15	9.19; 9.30	5.71; 5.85	94.8; 95.7	10.70; 10.60
1100	30	7.70	4.88	98.4	9.92
1000	10	7.87	5.00	107	9.83

Legend: (1) Temperature, °C, (2) heating time, min. This shows that with intense formation of p-groups (i.e., at low temperatures) the melt has a lower resistivity and higher dielectric losses than melts heated at high temperatures. The dielectric constant, however, remains nearly unchanged, which requires further investigations. There are 2 figures, 2 tables, and 3 Soviet-bloc references.

Card 2/3

Relationship between the ...

S/C76/62/036/003/008/011
B101/B108

ASSOCIATION: Leningradskiy tekhnologicheskii institut im. Lensovet
(Leningrad Technological Institute imeni Lensovet)

SUBMITTED: April 16, 1961

Card 3/3

AVGUSTINIK, A.I.

"Alloys on the basis of heat resistant compounds" by G.V.
Samsonov, K.I. Portnoi. Reviewed by A.I. Avgustinik. Zhur.prikl.
khim. 35 no.10:2352 O '62. (MIRA 15:12)

(Heat resistant alloys)

(Samsonov, G.V.) (Portnoi, K.I.)

AVGUSTINIK, A.I.

"Alloys on a base of high-melting compounds" by G.V.Samsonov,
K.I.Portnoi. Reviewed by A.I.Avgustinik. TSvet. met. 35
no.9:94 S '62. (MIRA 16:1)
(Ceramic metals) (Samsonov, G.V.) (Portnoi, K.I.)

AVGUSTINIK, A. I., prof.

Use of scarce and rare earth metals and their compounds in
the technology of silicates. Zhur. VKHO 8 no.2:135-141 '63.
(MIRA 16:4)

(Metals, Rare and minor)
(Rare earth metals)
(Silicates)

ABRAMSON, I.D.; AVGUSTINIK, A.I., doktor tekhn. nauk, prof.,
retsenzent; BUMSHTEYN, S.I., inzh., red.; VINOGRADSKAYA,
S.I., red. izd-va; KUZ'MIN, G.M., tekhn. red.

[Ceramics used in the airplane industry] Keramika dlia
aviatsionnykh izdelii. Moskva, Oborongiz, 1963. 239 p.
(MIRA 16:5)

(Airplane industry) (Ceramics)

S/063/63/003/002/003/015
A057/A126

AUTHOR: Avgustinik, A.I., Professor

TITLE: Application of rare and rare-earth metals and their compounds in
silicate technology

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendele-
yeva, v. 8, no. 2, 1963, 135 - 141

TEXT: This is a review of the application of rare and rare-earth elements
based on literature data. The source of recovery, properties of the element,
the compounds used, as well as the use and properties are given of the products
manufactured of the following elements: Li, Be, Sr, Zr, Hf, Th, Ta, Nb, and the
rare earths. There are 3 tables.

Card 1/1

AVGUSTINNIK, A. I.

TITLE: Seminar on refractory metals, compounds, and alloys (Kiev, April 1963).

SOURCE: Atomnaya energiya, v. 15, no. 3, 1963, 266-267

ACCESSION NR: AP3008085

seminar. One hundred papers were presented. Among them were the following:

I. I. Kornilov. The interaction between refractory compounds involving the formation of binary, ternary, and multicomponent solid solutions.

G. V. Samsonov. Classification of hydrides, nitrides, and other compounds of nonmetals with elements of the periodic table.

V. N. Yeremenko, Z. I. Tolmachev. The relationship between some properties and the electron structure of transition metals and their interstitial phases.

G. V. Samsonov. The nature of the catalytic properties of transition metals.

I. A. Kedrinskiy, A. I. Avgustinnik, Ye. A. Berkman. Experimental data on the catalytic activity of refractory metal electrodes in electrochemical reactions.

Card 2/11

AVGUSTINNIK, A. I.

TITLE: Seminar on refractory metals, compounds, and alloys (Elev, April 1963).
SOURCE: Atomnaya energiya, v. 15, no. 3, 1963, 266-267.

ACCESSION NR: AP3008085

S. S. Ordan'yan, A. I. Avgustinnik, V. S. Vidergauz. The ZrC-Mo phase diagram at temperatures above 2500C.

L. B. Dubrovskaya, G. P. Shveykin. Phase diagram of the Ta-C system at temperatures above 2500C.

Yu. N. Vil'k, R. G. Avarbe, and others. The NbC-W interaction at temperatures above 2500C.

L. M. Katanov. Investigation of the Cr_2C_3 -Fe, Cr_7C -Fe, and Cr_2C -Ti systems at temperatures below 2500C.

Yu. B. Kuz'ma, Ye. I. Glady'shevskiy, and Ye. Ye. Cherkashin. Physicochemical investigation of the Nb-Co-Si system.

N. N. Kolomy'tsev, N. V. Moskaleva. Phase composition of Mo-Ni-B alloys.

Ye. I. Glady'shevskiy and others. Interaction between group 4a and

Card 6/11

AVGUSTINNIK, A. I.

TITLE: Seminar on refractory metals, compounds, and alloys (Kiev, April 1963).
SOURCE: Atomnaya energiya, v. 15, no. 3, 1963, 266-267.

ACCESSION NR: AP3008085

germanides and their properties.

T. I. Zhuravlev, A. I. Avgustinnik, V. S. Vidergauz. Precipitation of refractory compounds by the electrophoresis method.

Ye. A. Shtrum. Application of transfer reactions for growing single crystals of refractory compounds.

K. S. Pridantsev, N. S. Solov'yev. Technology of production and the use of nonmagnetic zirconium-base alloys.

T. V. Krasnopevtseva, P. M. Paretskaya. Chromium-base precision alloys.

M. V. Vink. Application of zirconium boride and molybdenum silicide antiemission coatings.

O. P. Kolchin, I. K. Berlin. Synthesis and use of niobium carbide.

Card 5/11

AVGUSTINIK, A.I.; VICDERGAUZ, V.S.; ZHURAVLEV, G.I.; KHAMOVA, V.I.

Simultaneous precipitation of several components for obtaining
ceramic coatings by electrophoresis. Zhur. prikl. khim. 36
no.8:1646-1650 Ag '63. (MIRA 16:11)

AVGUSTINIK, A.I.; VIGDERGAUZ, V.S.; ZHURAVLEV, G.I.

Effect of the dispersity of the solid phase on its electrophoretic
precipitation from suspensions. Zhur. prikl. khim. 36 no.8:1650-
1654 Ag '63. (MIRA 16:11)

AVGUSTINIK, A.I.; VIGDERGAUZ, V.S.; ZHURAVLEV, G.I.

Electrophoresis as a method of depositing ceramic coatings.
Zhur. prikl. khim. 36 no.11:2539-2540 N '63.

(MIRA 17:1)

BUDNIKOV, Petr Petrovich, akademik; OVCHARENKO, F.D., akademik, otv. red.; BEREZHNOY, A.S., red.; BUTT, Yu.M., prof., red.; MCHEDLOV-PETROSYAN, O.P., red.; AVGUSTINIK, A.I., prof.; BARZAKOVSKIY, V.P., doktor khim. nauk, red.; KUKOLEV, G.V., prof., red.; MAIVEYEV, M.A., prof., red.; MCHEDLOV-PETROSYAN, O.P., prof., red.; ROYAK, S.M., prof., red.; POKROVSKAYA, Z.S., red.

[Chemistry and technology of silicates] Khimiia i tekhnologii silikatov. Kiev, Naukova dumka, 1964. 608 p.

(MIRA 17:12)

1. Akademiya nauk Ukr.SSR (for Ovcharenko). 2. Chlen-korrespondent Ukr.SSR (for Berezhnoy). 3. Chlen-korrespondent AN SSSR i deystvitel'nyy chlen Pol'skoy Akademii nauk, AN Ukr.SSR (for Budnikov).

AVGUSTINIK, A. I.; SINTSOVA, I. T.

"Investigation of processes preceding crystallization of glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,
16-21 Mar 64.

Inst Chemical Technology

ACCESSION NR: AP4037231

8/0153/64/007/001/0101/0105

AUTHOR: Avgustinik, A. I.; Sintsova, I. T.; Yudin, D. M.

TITLE: The precrystallization period in glasses of the K sub 2 O SiO sub 2 system

SOURCE: Izvuz. Khimiya i khimicheskaya tekhnologiya, v. 7, no. 1, 1964, 101-105

TOPIC TAGS: glass, crystallization, precrystallization, K sub 2 O SiO sub 2 system, prenucleation group, rate, formation, K sub 2 O.2SiO sub 2, IR analysis, EPR analysis, quartz bond rupture, disilicate bond formation, microhardness, modulus, shear, sonic rate, glass strength, amorphous glass, crystalline glass, internal thermal stress

ABSTRACT: This study was conducted to explain the effect of the crystallizability of a glass on the rate and degree of prenucleation group (p-group) formation. Two glasses of the K_2O-SiO_2 system were examined: A, containing 33.4 mol% K_2O , 66.6 SiO_2 , readily crystallizing as $K_2O.2SiO_2$, and B, containing 19 K_2O and 81.0 SiO_2 , having the least tendency to crystallize and approximating the eutectic between $K_2O.4SiO_2$ and SiO_2 . In the binary glass $K_2O.SiO_2$ changing the cooling causes a change in the fine structure as evidenced by IR absorption and electron paramagnetic resonance

Card

1/3

ACCESSION NR: AP4037231

spectra: the increase in intensity at 980 cm^{-1} and shift toward the shorter wave length indicates molecular vibrations in the formed groups; the resonance lines indicate rupture of quartz bonds and disappearance of high silica content with simultaneous increase in the number and strength of the disilicate bond. As the holding temperature is reduced and as holding time is increased, the microhardness, modulus of shear, and sonic rate are increased in glass A. This increased strength results from a gradual transition from the amorphous to the more regular and oriented structure. The composition and structure of the p-groups formed approximate those of the crystalline phase formed by homogeneous crystallization. In the non-crystalline glass B no change was noticed in the IR spectra even after holding at 1100°C for 26 hours. This further confirms that the rate of the p-groups formation determines the ability of a glass to crystallize. The decrease in microhardness upon prolonged annealing in this glass B is attributed to relieving the internal thermal stresses. "Graduate L. G. Lazarevich participated in the work." Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Leningradskiy tekhnologicheskii institut im. Lensovyeta Kafedra tekhnologii keramicheskikh proizvodstv (Leningrad Technological Institute, Branch of Ceramic Industries)

Card 2/3

ACCESSION NR: AP4037231

SUBMITTED: 24Sep63

ENCL: 00

SUB CODE: MT

NO REF SOV: 008

OTHER: 001

Card

3/3

AVGUSTINIK, A.I.; SINTSOVA, I.T.

Infrared spectra and mechanical properties of glasses of the
 $K_2O - SiO_2$ system in the partial substitution of CaO , MgO , and
 Al_2O_3 for K_2O . *Izv.vys.ucheb.zav.; khim. i khim.tekh.* 7 no.2:
274-279 #64.
(MIRA 18:4)

1. Leningradskiy tekhnologicheskii institut im. Lensoвета, kafedra
tekhnologii keramicheskikh proizvodstv.